

# Preliminary Evaluations

Resource Actions EW-17/51, 19A,  
22, 89, 94, 91/92

# EWG-17/51

- “Enhance riparian vegetation and trees along banks for shading and increased habitat complexity.”
- Specific locations have not been determined
- Could possibly be done in conjunction with other measures (e.g., rearing habitat enhancement) as part of a comprehensive restoration and enhancement program

# EWG-17/51 (cont.)

- Numerous other Resource Actions involve riparian vegetation enhancement and restoration
- Factors limiting riparian vegetation include available substrate, levees, flow regime and exotic vegetation
- Information on riparian conditions will be forthcoming from SP T3/5



# EWG-17/51 (cont.)

- Some localized benefits could be obtained by site-specific enhancements (garden projects, etc.)
- A superior approach would be to integrate all riparian and geomorphic restoration measures into a planning and design study for the entire corridor

# EWG-19A

- Modify or reconstruct benches to enhance spawning and rearing habitat
- Targeted for lower Feather River
- Aimed at salmonids and splittail
- Potential benefits include diversification of instream and floodplain surfaces within levee boundaries





# EWG-19A (cont.)

- Related to other measures that would set back levees, create side channel habitats or improve riparian conditions (e.g., EWG-16A, 16B, 22 and 89)
- Conditions in the area:
  - Incised stream, disconnected from floodplain, still incising
  - Locally diverse geomorphology (point bars, islands, etc.)
  - Dominant controlling factor is streamflow regime



# EWG-19A (cont.)

- Focus further evaluation on selected locations: RM 39-54, 34-35.5 and 0-9 where conditions may be most suitable
- Supportive flow management regime must be determined (Modeling Group)
- Coordinate with riparian restoration planning as part of a comprehensive program
- Evaluate construction costs and impacts

# EWG-19A (cont.)

- Evaluate upstream and downstream effects on geomorphic process
- Evaluate potential response to stressing events
- If successful, the result would resemble a scaled-down alluvial system confined between levees

# EWG-22

- Improve connectivity of floodplain to the Feather River through levee setbacks
- Targeted for lower Feather River
- Aimed at improving habitats for chinook salmon and splittail
- Potential benefits include improved fish habitat and riparian conditions



# EWG-22 (cont.)

- Related to other measures that create geomorphic surfaces, create side channel habitats or improve riparian conditions
- Conditions in the area:
  - Incised stream, disconnected from floodplain
  - Levees are not uniformly close to the stream
  - Dominant controlling factor is streamflow regime
  - Virtually all private land
  - Much potentially restorable land (mostly in agricultural uses) is within levee boundaries



# EWG-22 (cont.)

- Questions to address:
  - Where should levee setbacks be to maximize their benefits?
  - Are lands available in the appropriate locations?
  - Would setbacks work without changing the flow regime?
  - What flow regime would maximize benefits?
  - What can be achieved without levee setbacks?
  - Would the setbacks adhere to Comprehensive Study Guiding Principles?

# EWG-89

- Proposed spawning habitat enhancement by creating levee setbacks allowing streamflow to access gravel deposits
- Targeted for low flow channel
- Premise is that gravel could be recruited from areas opened to stream action by setbacks
- Benefits could include increased area available for recruitment and development of riparian vegetation



# EWG-89 (cont.)

- Levee setbacks alone will not achieve the objective of improving spawning habitat
  - Setbacks will increase crosssectional area and reduce stream power
  - Increased crosssectional area and same flow regime may cause impacts on stream temperature
  - Even if gravel is recruited, would it reach riffles and remain there?

# EWG-89 (cont.)

- Levee setbacks in defined locations could provide some benefits:
  - Potential locations at RM 59-62 and 63-64 (west bank) and 59-60 (east bank)
  - Reduced stream power during peak flows = improved gravel retention
  - Increased area available for riparian vegetation recruitment and development



# EWG-89 (cont.)

- Consider advantages of combining levee setbacks in defined locations with other measures:
  - Direct gravel placement at riffles or in the river (EWG-92)
  - Riparian enhancement and restoration
  - Pond enhancement in OWA (generates gravel for placement)(EWG-94)

# EWG-94

- Increase flows into the Oroville Wildlife Area ponds (to increase area and depth)
- Three potential options:
  - Increase capacity of existing weirs
  - Levee removal/setbacks
  - Excavate ponds to reach groundwater
- This PM&E will be incorporated into either EWG-16A/B, EWG-22, EWG-89 or EWG-92

## EWG-94 (cont.)

- Enlarging weirs or breaching levees and diverting additional non-floodflows could have impacts on Feather River resources (reduced flows in main channel)
- Direct excavation is probably the most efficient approach
- Direct excavation would also generate gravel for spawning area enhancement

# EWG-91/92

- Proposed gravel replacement for enhancement of salmonid spawning areas in the low flow channel
- Measure would improve presently armored conditions at riffles
- Would potentially benefit anadromous fish production (increased area of suitable gravels = reduced redd superimposition)





# EWG-91/92 (cont.)

- Limitations on spawning habitat are due to upstream dams trapping sediment and periodic peak flows that move gravel out of the LFC
- Three options:
  - Direct placement
  - Placement at top of low flow reach
  - Placement at naturally eroding banks



# EWG-91/92 (cont.)

- Options (1) and (2) require washing the gravel before placement (expensive)
- Gravels are retained under controlled flows but flushed during peak flows
- Flushing of gravels downstream could have benefits there (geomorphic surface development)

# EWG-91/92 (cont.)

- Instream structures at riffles could be used to help retain gravels and enlarge spawning habitat
- Excavation of ponds in Oroville Wildlife Area (EWG-94) could provide a source of gravel
- Other forms of spawning habitat creation could also be considered





# EWG-91/92 (cont.)

- Further study is needed:
  - What quantities of gravel should be placed?
  - Where and how should placement be done?
  - What modifications to the flow regime would be necessary e.g., pulsed flows to move gravel to riffles?
  - What instream structures might be used and where?
  - Feasibility of combining this measure with pond enhancement in the Oroville Wildlife Area



# Questions?

